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Rural and Remote Health www.rrh.org.au
James Cook University ISSN 1445-6354

REVIEW ARTICLE

The landscape of non-psychotic psychiatric illness in rural Canada: a narrative review

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PUBLISHED

9 February 2024 Volume Issue

HISTORY

RECEIVED: 24 March 2023

REVISED: 2 October 2023

ACCEPTED: 5 October 2023

CITATION

Paquet J, Hibbard K, Brett-MacLean P. The landscape of non-psychotic psychiatric illness in rural Canada: a narrative review . Rural and Remote Health 2024; : 8341. https://doi.org/10.22605/RRH8341

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ABSTRACT:

Introduction: Canada's rural population has diverse demographic features and accounts for 18.9% of Canada's population. Indigenous Peoples (First Nations, Inuit, and Métis), who are highly represented in rural communities, have additional risk factors related to colonialism, and historical and ongoing trauma. Understanding how to best respond to elevated rates of psychiatric illness in rural and remote communities requires an understanding of the unique challenges these communities face in accessing and providing high quality psychiatric services. This article reports a review of published literature on prevalence of non-psychotic psychiatric conditions, as well as the risk and protective factors influencing rates and experience of mental illness in rural and remote communities in Canada to help inform approaches to prevention and treatment.
Methods: This focused narrative review of literature related to rural non-psychotic psychiatric illness in rural and remote Canada published over a 20-year period (October 2001 – February 2023). A review of CINAHL, Medline and Academic Search Complete databases supplemented by gray literature (eg federal and provincial documents, position papers, and clinical practice guidelines) identified by checking reference lists of identified articles, and web searches. A textual narrative approach was used to describe the literature included in the final data set.
Results: A total of 32 articles and 13 gray literature documents

were identified. Findings were organized and described in relation to depression and anxiety and substance use suicidality and loss; rates for all were noted as elevated in rural communities. Different mental health strategies and approaches were described. Variability in degree of rurality, or proximity to larger metropolitan centers, and different community factors including cohesiveness and industrial basis, were noted to impact mental health risk and highlighted the need for enhancing family physician capacity and responsiveness and innovative community-based interventions, in addition to telepsychiatry.

Conclusion: Further focus on representative community-based research is critical to expand our knowledge. It is also critical to consider strategies to increase psychiatric care access, including postgraduate medical training and telehealth training.

Keywords:

anxiety, depression, Canada, Indigenous, mental illness, psychiatric illness, telepsychiatry, self-harm, substance use, suicide.

FULL ARTICLE:

Introduction

In Canada, a nation characterized by both geographic and ethnic diversity, the *Canada Health Act 1984* comprises terms and conditions established to ensure equity in service access and delivery within a publicly funded system[1]. Rural and remote communities account for 18.9% of Canada's population, with longstanding inequities within service delivery, especially with respect to addiction and mental health[1,2] leading to delay in diagnosis and treatment, impacting illness severity and outcomes[3]. A 2019 review of rural mental health services in Canada by Friesen, published as a perspective paper, described different barriers to accessing mental health, strategies for improving access to mental health services, and promising approaches to treatment, including the use of technology[4]. Employing systematic search methods, the present narrative review was undertaken to further advantage understanding of mental health needs in rural and remote Canada with a focus on non-psychotic psychiatric illness. Prior to specifying parameters and search criteria for the current narrative review, a preliminary, early broad search of the literature was completed.

Rural Canada: definition and demographics

According to Statistics Canada, a rural area is defined as a region containing a population of less than 1000, while a small population center (SPC) is considered to have a population less than 299 999. However, research typically classifies both SPCs and rural centers as rural[4-9]. Even among communities designated as rural with similar population size and densities, there is great heterogeneity in the values, culture and beliefs that shape each community[6,10]. Significant diversity can also be found with respect to community cohesiveness, proximity to regional or metropolitan centers, population aging, along with other demographic features[11]. As an example, with respect to ethnocultural composition, 60% of Indigenous Peoples (First Nations, Inuit, and Métis) live in rural and remote communities while only about a third of non-Indigenous Peoples live in rural communities[12]. Indigenous Peoples living in rural and remote communities are younger, have lower educational completion and workforce participation rates, all contributing to a significant income gap in comparison to non-Indigenous people[12]. Additional adverse impacts include the effects of colonialism, residential schools, systemic racism, and intergenerational trauma, all of which contribute to psychiatric morbidity[12,13].

While the rural population is growing overall, it is growing at a slower rate than in other areas of Canada because most new immigrants are choosing to settle in urban areas. With rural youth migrating to larger urban centers for employment and educational opportunities, those remaining in rural communities, in particular older adults, experience reduced levels of social support[14]. While rural communities make significant contributions to the economic growth and prosperity of Canada, these migratory trends have been associated with patterns of economic declines, leading to fewer local resources and services, which necessitates long commutes for essential services[8,11,13]. Negatively impacting a community's sense of autonomy, these experiences have been noted to strain community cohesiveness[10,11,15].

Mental health service delivery in rural Canada

In rural and remote communities, primary care providers and emergency physicians are crucial in addressing mental health issues given minimal access to other mental health supports[13,15]. With a lower population density, it is challenging to recruit and retain healthcare providers – in particular those working in specialty areas, such as psychiatrists – in rural and remote areas[13,15-17]. Access to psychiatric services varies tremendously across Canada, with an average of 13.1 psychiatrists per 100 000 citizens[18]. As an example, considered as a whole there are 10.6 psychiatrists per 100 000 population in Alberta; however, in Northern Alberta, a predominantly rural/remote region, there are a mere 3.8 psychiatrists per 100 000. Further, these psychiatrists are located in regional centers that provide acute inpatient services, rather than community-centered care[18]. Similarly, in Ontario and Quebec, despite improved access, most psychiatrists practice in metropolitan centers such as Montreal and Toronto, creating similar challenges in meeting the needs of populations living in remote and northern communities in those provinces[18]. Rural and remote patients, especially those with low socioeconomic status, have the lowest rates of aftercare, likely related to limited resources to attend appointments in large urban centers[16].

Prevalence of psychiatric illness in rural Canada

In addition to highlighting social and healthcare inequities, increasing rates of mental illness and suicide in rural and remote communities calls for innovative, responsive, cost-effective approaches[13,19-21]. Canadians, both urban and rural, face a 20% prevalence of mental illness and addiction annually, with a lifetime prevalence of 33%[19,22]. Substance use disorder is the fifth most common reason for hospital admission in Canada after childbirth, COVID-19, and myocardial infarctions and cardiovascular disease[23]. Although likely underreported due to stigma, rates of mental illness are known to be higher in rural and remote communities, up to two times the national rate[3,8,13,24,25]. For those who present to the emergency department for psychiatric reasons, most present with both substance use and mental health concerns[26]. Substance, mood, and anxiety disorders are the most

common psychiatric disorders, with lifetime prevalences of 33.1%, 12.6%, and 8.7% respectively; and 12-month prevalences of 10.1%, 5.4%, and 2.6% respectively[22]. It is well understood that social inequity and socioeconomic factors such as unemployment, inadequate housing, and lack of access to healthcare impact the incidence and severity of psychiatric illness[3,8,11,13]. Further, since 2020, COVID-19 has aggravated health disparities, with a greater burden of mood, anxiety, and substance-use symptoms among those on lower incomes[17]. Given the low prevalence and heterogeneity of psychotic disorders, non-psychotic illness was selected as the focus of this study.

Objective

The current narrative review aimed to synthesize findings of previously published research studies and reports on rural mental health, utilizing small population centers and rural within our definition, in Canada, to advance our understanding of risk and protective factors influencing presentation of non-psychotic psychiatric illness and inform development of approaches to responding to mental health needs in rural communities.

Methods

A focused narrative review of relevant research studies and gray literature from October 2001 to February 2023 was conducted to develop a descriptive synthesis of available literature to advance understanding of non-psychotic psychiatric disorders in rural Canada. A wide range of English- and French-language literature was eligible for inclusion including qualitative, quantitative, and mixed-methods research, reviews, case studies, letters to the editor, and other published reports.

Inclusion criteria

Selected literature was identified as eligible for inclusion if the document: reported on mental health in rural/remote communities in Canada, explicitly focused on primary non-psychotic psychiatric diagnosis (depression, anxiety, substance use, etc.) or consequence (suicide) and/or considered the risk or protective factors or the impact of interventions on non-psychotic psychiatric illness prevalence, incidence, or outcomes.

Search strategy

Several databases were searched to identify published manuscripts, including CINAHL, Medline and Academic Search Complete. Relevant search terms were identified and combined with Boolean operators as per the inclusion criteria and database algorithms. Search terms were as follows: "Rural" or "Remote" communities; "Canada" or "Canadian" or "Canadians" or "Canadian provinces"; "Depression" or "Depressive disorder" or "Depressive symptoms"; "Anxiety" or "Anxiety disorders"; "Substance use" or "Substance abuse" or "Drug use" or "Drug abuse" or "Drug addiction"; "Suicide prevention" or "Suicide reduction" or "Suicide intervention"; "Mental health" or "Mental illness" or 'Mental disorder" or "Psychiatric illness"; "Virtual care" or "Telehealth" or "Telemedicine" or "Telemonitoring" or "Telepractice" or "Telenursing" or "Telecare"; "Text messages" or "Text messaging service" or "Text messaging" or "SMS".

In addition, gray literature, such as Canadian federal and provincial reports, clinical practice guidelines and position papers, was identified by checking reference lists of identified articles and conducting web searches.

After compiling all eligible literature references, duplicate records were identified and removed. Following this, titles and abstracts were screened and, if indicated, the full text of the document was reviewed to ensure its alignment with the specific inclusion criterion.

Charting the data (data extraction)

A standardized template was used to facilitate a narrative synthesis of the collected data. For all included articles and reports, the following information was summarized:

- demographic characteristics of the study population (healthcare providers, community members, stakeholders) – number of participants, age (range and mean age) and setting (Canada, specific province)
- research methods (eg qualitative, quantitative, mixed methods and case studies)
- primary and secondary outcomes – for treatment strategy and innovation articles and type of intervention (primary care, community-based, telehealth, text messaging)
- challenges and recommendations regarding the implementation of the initiative responses.

Data verification and analysis

Preliminary data extraction completed by the first author (JP) was subsequently reviewed and validated as sufficiently descriptive, or flagged for discussion regarding potential revision by PB to ensure descriptive accuracy. Potential discrepancies and inconsistencies were discussed and consensually resolved by the authors. Extracted information from included studies and reports was synthesized in relation to varying emergent patterns associated with different search parameters/categories.

Ethics approval

As this study analyzed already existing published data and did not directly involve patient participants, research ethics approval was not required.

Results

A total of 208 unique articles were published, and 13 gray literature documents were noted between 2001 and 2023. A total of 32 articles (including a number that were identified during the preliminary broad search of literature that helped to inform search parameters for this review) and all additional gray literature documents included in the final data set (Tables 1,2). Included articles and reports focused on specific diagnoses such as depression and anxiety (n=8), substance use (n=6) and suicide (n=7) and/or considered promising treatment strategies and approaches (n=10). In addition to recognizing unique demographic and geographic characteristics of diverse rural and remote areas, several articles addressed this as a specific focus. Barriers and limitations of service delivery in rural communities were also frequently addressed, along with suggested treatment strategies (n=12).

Most of the studies were published within the past 10 years (n=18). About 20% considered mental health across rural Canada, while others included articles and reports focused on different provinces and regions. Of these, most were from British Columbia (n=8) or Ontario (n=6). There were fewer published studies and reports from the Prairie (Alberta (n=4), Saskatchewan (n=1), and Manitoba (n=2)) and Atlantic provinces (n=3). Only one Francophone study, from New Brunswick, was included in the data set.

Table 1: Peer-reviewed published research studies on non-psychotic psychiatric disorders in rural Canada – key findings

Author(s), year [ref]	Population/setting	*n*	Age (mean (M) and/or range) (years)	Province(s)	Type of study	Key findings
Depression						
Gadalla, 2009 [28]	Community health survey	108 986	≥12	Canada	Quantitative	Mood and anxiety disorders impact function, noted by more sick days, more care needs, and more modifications. Higher rates were noted among those with poorer social determinants of health.
Jones et al, 2011 [22]	People living in Alberta	3047	18–74	Alberta	Quantitative	Urban participants were more likely to agree with health professionals about their treatment for depression. Rural survey respondents had higher stigma against depression scores. Ability to recognize depression was associated with lower stigma scores. After adjusting for income and education, stigma scores remained higher among rural males.
Mechakra-Tahiri et al, 2009 [5]	People over 65 years living in community	2670	≥65	Quebec	Quantitative	Higher rates of depression in rural and urban areas compared to metropolitan Montreal. Poorer health and conflictual relationships with spouse and others associated with depression. Social support and volunteer work was associated with lower prevalence of depression.
Nolin and Jetté, 2015 [25]	Members involved in at-home research project in Moncton and a rural community	42	Not included	New Brunswick	Qualitative	Sense of belonging is helpful in lowering rates of depression. Limited autonomy, boredom and co-habitation escalate rates of depression. With substance use, struggled with medication management, escalating both hospitalizations and legal concerns.
Romans et al, 2011 [3]	Canadian community health survey aged 15 years and older	36984	15–69	Canada	Quantitative	Lower rates of depression among those living in rural areas. Noted protective factors included strong sense of community belonging. Risk factors included female gender, younger age, poor physical health, higher education, and unemployment.
St. John et al, 2006 [15]	Seniors (>65 years) in Manitoba	1382	Urban = 75.1 Town = 75.4 Rural = 75.6	Manitoba	Mixed methods	In rural regions, poor social connections, lower income, and worse health (functional impairment) was associated with depression. No differences were found between urban or rural communities after accounting for confounding variables. Factors associated with depressive symptoms varied between rural regions, small towns, and urban areas.
St. John et al, 2009 [6]	Seniors (>65 years) in Manitoba	807	Urban = 73.9 Town = 73.7 Rural = 74.5	Manitoba	Quantitative	Lower rates of depression among seniors in rural region; factors predictive of depression included female sex and poor self-rated health 5 years earlier.
Suicide						
Caxaj and Gill, 2017 [21]	Immigrants living in rural communities	19	26–70	British Columbia	Qualitative	Community characteristics such as the closeness of the community, lack of community practices and barriers to engage in occupational opportunities impact mental health. Lack of culturally specific services and concerns with anonymity and stigma limited access to mental health resources
Creighton et al, 2017 [46]	Men and women who lost the male to suicide	7	22–57	British Columbia	Qualitative retrospective	Ongoing symptoms of depression hidden from/overlooked by family members and friends. Persona of being a "golden boy" and feeling the need to maintain a strong demeanor exerted pressure at odds with his internal experience of depression (stigma of mental illness) was linked to suicide. Dominant masculine ideals and cultural ethos restrict the ability of young men to feel free to be themselves.
Creighton et al, 2017 [47]	Men and women who have lost men to suicide and men who experienced suicidal behavior	15	23–71 (M=44.3)	British Columbia	Qualitative	Mental health stigma, competitive individualism, cultural norms reinforcing stoicism, toughness, and resilience can inhibit males living in rural areas from acknowledging and seeking help for mental illness. Other strategies are used to manage mood and anxiety symptoms such as alcohol and drugs, violence and other risk-taking behaviors.
Gomez et al, 2020 [52]	Ontario members who were injured or died from firearm-related injury	6483	Not included	Ontario	Quantitative	Males constituted the majority of firearm injuries and the leading cause of fatal firearm injuries was self-harm (72.3%). Higher non-fatal and fatal self-harm behaviors in rural communities compared to urban and among older men. Higher firearm ownership in rural areas, associated with increased firearm death.
Jong et al, 2004 [35]	Patients using videoconferencing for mental health assessments	71	Not included	Newfound land and Labrador	Qualitative	Use of videoconferencing for collaborative consultation and mental health assessment of patients in remote northern communities was found to improve service delivery and be cost effective with reduced transfers to larger centers. High satisfaction ratings obtained from patients and health professionals. No seniors died by suicide during the study period.
Ryan et al, 2022 [10]	Those with lived experience with suicide (previous attempt or lost someone to suicide) aged more than 18 years, working in rural services and living in a community of less than 10 000 people	47	Not included	British Columbia, Alberta, Saskatchewan, Manitoba, Ontario, Newfoundland, and Labrador	Qualitative	Participants emphasized the diversity of rural communities, each having its unique challenges and strengths and importance of recognizing the cultural of a community when developing prevention initiatives and responding to suicide in the community. Challenges were identified in relation to strong community connections for newcomers, service providers and those experiencing suicidal ideation; as well as concerns for confidentiality (shared by all). It was recommended that a lived experience-based research agenda be prioritized that include the voices and stories of rural people, and the importance of collaborating with Indigenous communities to address lack of research and action in response to Indigenous suicide rates (three times higher than for non-Indigenous people).
Vasiliadis et al, 2013 [32]	Older adults (65 years or older) residing in community	2004	≥65	Quebec	Quantitative	Socioeconomic factors when combined with mood or anxiety disorders increase risk of suicide. Increased use of mental health resources if they have chronic conditions or have low socioeconomic status.
Substance use						
Mamakwa et al, 2017 [45]	Individuals treated with suboxone on remote First Nations reserves	526	M=32.3	Ontario	Quantitative	Four weeks intensive buprenorphine-naloxone substitution therapy and First Nations healing programming, and culturally appropriate land-based aftercare improved retention rates at 6, 12, 18 and 24 months and negative urine testing rates 84–95% higher than comparable non-Indigenous programs.
Mema et al, 2018 [41]	Participants attending an outreach harm reduction program in rural British Columbia	24	50% were 50–59	British Columbia	Qualitative	Fentanyl urine drug testing appealed to rural participants who had consumed within 3 days of the test, many who subsequently reported safe drug-use behavior. However, stigma as well as concerns with confidentiality of test results remained a significant barrier to seeking services.
Mema et al, 2019 [51]	Service users of mobile supervised consumption sites	82 interviews; 7970 visits	60% were 20–39	British Columbia	Mixed methods	Mobile services positively received by clients were effective in reducing overdose deaths in Kelowna and Kamloops through safe drug use and reversal of 23 and 7 overdoses respectively. Homelessness and public safety concerns remain ongoing concerns.
Mitchell and Schmidt, 2011 [31]	Grades 10–12 students from Northern British Columbia	161	Grades 10–12	British Columbia	Quantitative	Survey responses suggested alcohol was commonly used among participants, and otherwise drugs were not identified as being a significant problem, with 43% using cannabis, but other more addictive drugs were not identified as a problem. It was noted that heavy substance users may have been absent or dropped out of school and not completed the study
Slaunwhite and Macdonald, 2015 [49]	Rural family physicians	67	M=15.3 years of practice	British Columbia	Quantitative	Family physicians reported difficulty referring patients for treatment as well as limited detox or residential treatment services in regional centers. Long wait times were associated with poor mental health and addiction. Leaving the rural communities for treatment was not viewed as an optimal approach as it serves to isolate them from their families. An additional challenge that was noted was the lack of culturally informed specialists and services.
Varatharajan et al, 2018 [50]	Youth and key informants Northern Ontario communities	102 youth 35 key informants	14–25 (M=22.2)	Ontario	Mixed methods	Commonly used drugs include opioids, cocaine, and crack cocaine. Most youth participants reported comorbid psychiatric disorders (depression, anxiety, substance use, schizophrenia, and personality disorders). Limited knowledge of services, lack of confidentiality and privacy, and stigma were

						barriers to accessing care. Additional barriers included limited hours, space and requiring documentation. Flexible youth-specific, low threshold services, and harm reduction programs were recommended by youth.
Depression and anxiety						
Hardy et al, 2011 [11]	Canadian labor forces survey	35 140	Not included	Canada	Quantitative	Use of mental health services varied by age, gender, level of education, and degree of distress (mood and anxiety symptoms). Place of residence was not predictive of service use. It was noted the findings should be considered with caution as the number of rural residents seeking professional help was small. Further, individuals living in the northern territories (Yukon, Northwest Territories and Nunavut), remote communities and reserves were not included in the survey. 'Small scale studies of service models specifically designed for rural communities' was recommended.
Moskalenko et al, 2020 [30]	Urban and rural people from Saskatchewan	200	≥18	Saskatchewan	Quantitative	An online survey assessed interest in internet-based cognitive behavioral therapy along with structural, attitudinal, and technological barriers to care among adults living in rural and urban areas. High perceived need for mental health treatment was identified for both settings. Rural residency was associated with financial concerns which linked to lower perception of access and interest in cognitive behavioral therapy. It was noted that internet access is an important health equity issue.
Pickett et al, 2018 [48]	Canadian health behavior in school-aged children	29292	M=14.1	Canada	Quantitative	High levels of risk-taking behavior among farm children, particularly males, was negatively associated with general physical and mental health and academic performance. Speculated that this may be associated with rural cultural and identity, which carries both protective and negative effects.
Treatment strategies						
Agyapong et al, 2016 [36]	Text4Mood mobile app subscribers (Northern Alberta)	894	Half of respondents were 26–45	Alberta	Quantitative	Text4Mood mobile app improved overall mental health, and most users found the text messages to improve their mood, manage their affective and anxiety symptoms, and felt more hopeful, and more connected to a support system.
Agyapong et al, 2017 [37]	Patients with major depressive disorders	73	Not included	Alberta	Quantitative	Pilot trial of supportive text messaging resulted in Improvement in the Beck Depression Inventory scores for patients with major depressive disorder after the use of Text4Mood app.
Carlisle et al, 2012 [12]	Adolescents discharged during study period	7111	M=16.98	Ontario	Quantitative	Youth from rural and remote areas, and those with self-harm/suicide attempts and substance-use disorders were less likely to obtain aftercare 1 month following psychiatric hospitalization discharge. Urban residence was a strong predictor of specialist aftercare services. Youth in Southern Ontario were 450% more likely to receive aftercare than youth from Northern Ontario. Call for healthcare service innovation to address geographic inequities in mental health care, and provision of aftercare in the home communities of all youth.
Hrabock et al, 2021 [38]	Alberta residents using Text4Mood	6041	40% over 40	Alberta	Quantitative	Noted increased risk of generalized anxiety disorder especially among those of younger age, Indigenous, with lower education completion, unemployment and living with family during COVID-19.
Kornelsen et al, 2021 [13]	Rural citizens including healthcare providers	1158	18–91 (M=56.3)	British Columbia	Quantitative	Participants stressed the importance of local access to resources and services including primary, mental health and substance use care. Significant barriers including geographic (transportation), financial (lower income), and social (lower education), which led to feelings of vulnerability and treatment avoidance. Although not always available due to lack of high-speed reliable internet, increasing use of technology to provide care at a distance was also a recommendation.
Montgomery et al, 2008 [53]	Individuals with chronic mental illnesses, their family and care providers	172 (survey) 3 focus groups of 8–10 people	Not included	Ontario	Mixed methods	Homelessness is a significant concern and low-income housing, shelters and supports are less available in rural communities. More significant concern among those with severe mental illness. This study intends to evaluate the processes and outcomes of supported housing programs for persons living with SMI.
Parker et al, 2012 [42]	Individuals who use intravenous drugs in Atlantic Canada	118		Prince Edward Island, New Brunswick, Nova Scotia, Newfoundland, and Labrador	Qualitative	Those living outside of urban areas struggle to access clean injecting equipment and related supports through the needle-exchange programs; pharmacies were their usual source for buying equipment. Integrating needle-exchange programs into mainstream health service locations in non-urban settings was suggested.
Rebeiro et al, 2012 [39]	Individuals with SMI, providers and decision-makers in rural and urban settings	46 participants (20 with SMI, 18 providers and 8 decision-makers	16–64	Ontario	Qualitative	Higher rates of unemployment exist for those living with SMI in rural communities. Even with supports in place, individuals with SMI are perceived negatively regarding employment. There is a need to build community capacity and help shift attitudes and thinking to better support people with SMI in gaining meaningful employment in rural settings.
Steele et al, 2012 [16]	Primary care providers in rural and remote areas	847	Mostly 41–60	Canada	Quantitative	This study explored referral patterns of primary care physicians for child/adolescent mental health concerns. Reasons for referrals related to psychosis and suicidality, as well as neurodevelopmental disorders, violence, and abuse. Across all regions of Canada, physicians reported mid-level confidence managing their patients' mental health concerns, and having their patients' needs met in a timely manner. Primary care providers identified gaps in knowledge and skills as barriers to service provision and desired opportunities for professional development in this area.

SMI, severe mental illness.

Table 2: Gray literature on non-psychotic psychiatric disorders in rural Canada

Author(s), year [ref]	Organization(s)	Topic	Data source	Sample	Findings
Canadian Centre on Substance Use and Addiction and Mental Health Commission of Canada, 2021 [17]	Canadian Centre on Substance Use and Addiction and Mental Health Commission of Canada	Depressive symptoms, anxiety symptoms, suicidal ideation, substance use	National survey of Canadians over 16 years old	2502 (Oct–Nov 2020) 1507 (Nov–Dec 2020)	28–30% had a previous mental health diagnosis and 5–6% had a diagnosis of a substance-use disorder. During the COVID pandemic, there was a decrease in perceived mental health with an increase in moderate to severe depressive symptoms and moderate to severe anxiety symptoms compared to pre-COVID results. There had also been an increase in suicidal ideation and alcohol and cannabis use. There were more psychosocial stressors including finances and social isolation.
Center for Suicide Prevention, 2021 [33]	Center for Suicide Prevention	Suicide	Alberta	People who died by suicide in Alberta	Increased rates of suicide in northern Alberta compared to urban centers across all age groups.
Centre for Addiction and Mental Health, 2021 [16]	Center for Addiction and Mental Health	Mental health and substance use; suicide	Canada	Not available	20% of Canadians experience a mental illness each year. People aged 15–24 years are at higher risk of a mental health or addiction concern. Access to mental health and addiction services remain challenging given both stigma and limited access.
Friesen et al, 2019 [4]	University of Toronto	Strategies for improving access to mental health resources in rural Canada	Canada	Not available	Higher proportion of Indigenous Peoples living in rural communities. Must consider the use of technology, increase primary care supports, use of traveling clinics, coordinate services and focusing on northern communities as they are most underserved.
Government of Canada, 2020 [18]	Government of Canada	Suicide	Canada	Not available	Suicide is the second leading cause of people aged 15–34 years, with higher suicide rates in males across all ages. Women are more likely to engage in less lethal means, increasing their rates of hospitalization.
Jozaghi and Marsh, 2017 [43]	BC Center for Disease Control	Opioid use crisis	British Columbia	Not available	Data focus on Vancouver and other large urban centers, and overshadow rural trends who are also facing the opioid crisis. Calls for investment for all levels of government to address the needs or rural communities.
Kennedy et al, 2016 [44]	Canadian Network for Mood and Anxiety Treatments	Mood and anxiety disorders	Canada	Not available	Outline of approved medications for depressive and anxiety disorders. They note considerations for adjunct medications and strategies to guide medication choice.
Krawchenko, 2020 [9]	OECD	Indigenous health	Not available	Not available	Higher proportion of Indigenous peoples living in rural communities. They outline recommendations to address the inequities in finances, health, and leadership opportunities.
Letto et al, 2018 [34]	Newfoundland and Labrador Center for Applied Health Research	Program delivery for mental health and addiction across Canada	Canada	Not available	Use of technology, supporting primary care providers, coordinating care, and incorporating travel clinics to focus on rural and underserved communities
Parikh et al, 2016 [25]	Canadian Network for Mood and Anxiety Treatments	Mood and anxiety disorders	Canada	Not available	Psychological interventions are effective across the age span and among both females and males. Personality remains a negative prognostic factor in treatment outcomes.
Pearson et al, 2013 [19]	Statistics Canada	Depression, bipolar disorder, generalized anxiety disorder, substance-use disorder	Canadian community health survey of Canadians aged over 15 years	25 100	10% of respondents reported at least one psychiatric illness with 33% meeting criteria for at least one psychiatric disorder in their lifetime. Substance-use disorders were most common, followed by mood disorders. Females and youth aged between 15 and 24 years had higher rates of depression. Males had higher rates of substance-use disorders.
Statistics Canada, 2018 [8]	Government of Canada	Rural distribution in Canada	Canada	Not available	Fewer younger people residing in rural communities over time with larger groups of seniors.
World Health Organization, 2021 [22]	World Health Organization	Depression	Not available	Not available	Depression is more common in women. Many people lack access to treatment, including modifiable barriers including social stigma and access to healthcare providers.
World Health Organization, 2021 [28]	World Health Organization	Suicide	Not available	Not available	Higher rate of suicide among Indigenous Peoples, those experiencing conflict or facing life stressors. Stigma remains an ongoing challenge in suicide prevention globally.

Depression and anxiety

Globally, depression is a leading cause of morbidity, with personal, occupational, and functional consequences including unemployment, physical and pain syndromes, and self-care deficits[3,22,25,27] The data were mixed on the prevalence of depression between urban and rural communities in Canada[3,8,11,25,28], and one study suggested depression rates may be up to three times greater in rural communities compared to their urban counterparts, especially for young adults in rural communities with reduced educational, vocational, and lifestyle opportunities, resulting in functional and self-care impairments[11]. Overall, individuals in rural communities have decreased access to education with lower academic attainments compared to their urban counterparts[3,11,17]. Similar to urban areas, those who are less educated have reduced knowledge of depression, higher levels of perceived stigma and are less likely to adhere to treatment plans, culminating in worsened outcomes[25]. Males, especially younger males, often have a higher self-stigma towards depressive symptoms, making them less likely to access mental health supports[29]. Despite more affordable housing in some rural communities, limited earning potential and reduced job security reduce the likelihood of home ownership[3,28]. Many rural communities rely economically on resource acquisition such as through forestry, agriculture or oil extraction, the economic instability of which can further the sense of despair and hopelessness[30]. Given the significant impacts of education and employment, rural members are at risk of depression given an external locus of control, hopelessness, and feelings of inadequacy[3,28].

In addition to the wide range of social determinants of health implicated in the prevalence of depression in rural areas, out-migration of youth to larger urban centers is associated with reduced fiscal capacity of rural communities, leading to challenges in providing essential healthcare and recreational services. The resultant need to commute to more urban areas for these services places additional financial strain on members of rural communities[11,28].With fewer opportunities for extracurricular activities and facilities, and resulting higher levels of physical inactivity together with the higher cost of groceries, rural members are more likely to rate their physical health as poor[3,8,11,28,31], which all contributes to an elevated risk for depression[32].

Although rural communities have many socioeconomic risk factors, they also have unique protective factors against the development of depression that can be honed, namely community cohesion and stability of social networks[3,11,28]. In many rural communities, friendships are long-lasting[11]. However, for some community members, this sense of community bonds may limit integration, which is especially salient for newcomers to Canada[24]. Limited

social infrastructure, including those supporting religious and cultural practices, can further strain supports available to those with diverse value and belief systems[3,25]. This dichotomy highlights the need to attend to meaningful community ties and social cohesion for newcomers[3,11]. Considered together, the biological, psychological, and social underpinnings of depression suggest varied opportunities to mitigate the morbidity and prevalence of depression through policy, health and social service delivery.

Despite the overlap of risk factors for anxiety disorders, including financial, occupational, and interpersonal struggles, research has not identified a significant difference in anxiety disorders between urban and rural areas[3,33]. However, it is unclear if the prevalence may be underdiagnosed in rural communities, with patients attributing symptoms to physical causes, and recognized by practitioners only at chance levels, given the lack of use and relevance of screening questions[33]. Similar treatment guidelines have been outlined to treat anxiety and depression given their comorbidity.

According to the Canadian Network for Mood and Anxiety Treatments, the Canadian psychiatric guidelines for management of mood and anxiety disorders, pharmacologic and non-pharmacologic treatments are considered gold standard. These include selective serotonin reuptake inhibitors, serotonin and norepinephrine reuptake inhibitors, and cognitive behavioral therapy (CBT), interpersonal therapy and behavioral activation, with a combination of psychotherapy and psychopharmacology being more effective than either alone[32,34]. Limited health services, including minimal access to psychotherapy and increased reliance on pharmacological management in the treatment of psychiatric illness, calls for innovative models to improve access to non-pharmacologic treatments[9,13,24]. Recognizing this need, Alberta introduced the Text 4 Mood messaging app for residents of Northern Albertan communities, which provides free daily supportive messages based on the principles of CBT. Many patients have reported an increased sense of hopefulness and connection, along with improvement in anxiety and depressive symptoms[27,35-38].

Others have discussed the benefits of virtual care in reducing disparities in mental health care. Various strategies have been implemented in Canada. Urban psychiatrists are using videoconferencing to deliver services to remote communities, helping to overcome financial and transportation barriers[13,35,39]. Despite initial cost investment, telehealth offers a timely, effective solution for augmenting available services, contributing to overall cost savings for both the health system and the patients and their families, as well as improved outcomes[39]. This strategy has been effectively deployed in areas connected to large metropolitan centers that have a high density of psychiatrists available to provide such supports[13]. Other regions such as Nova Scotia and Manitoba have organized a collaborative telehealth initiative involving rural community providers and psychiatrists at urban, suburban, and regional psychiatric care sites[34,35]. These have demonstrated improved psychiatric outcomes, including adherence to treatment, patient engagement in aftercare treatment, and access to psychotherapy and improved collaboration with primary care physicians[16,34,35].

Technology may further provide opportunities to build community capacity by telephone or virtual consultations with physicians and continuing medical education for primary care providers[15]. Ontario's Extension of Community Health Outcomes and British Columbia's Rapid Access to Consultative Expertise program have both demonstrated the increased collaboration among urban and rural practitioners[5,35] to support improved evidence-based practices for physicians struggling with optimizing treatment plans and medication management for patients, many of whom may be unwilling to follow through with treatment recommendations for a variety of reasons including lack of understanding, mistrust, and financial pressures[5].

Online delivery of CBT, a gold standard treatment for mood and anxiety disorders, is currently helping to extend needed treatment to rural communities that do not have access to other in-person psychotherapy options[29]. However, some limitations to telehealth have been noted, namely internet accessibility, available providers to organize the clinics and set up the needed platforms, and patient and provider engagement, given the concerns regarding stigma and confidentiality, and upfront costs of the technology[13,39].

Substance use

According to the Canadian Institute for Health Information, more than 500 Canadians are admitted to hospital daily secondary to substance use, with higher rates of admission in rural and remote regions in the North (the Yukon, Northwest Territories, and Nunavut)[40]. Available research suggests high rates of severe substance-use disorder. A propensity to over-value stoicism in rural communities, impeding help-seeking, may lead some to engage in substance use. Although rural community members typically view substance use as adaptive, used to self-medicate and conceal mental health problems, the epidemic of alcohol-use disorder and opioid-use disorder points to unmet psychological and social needs[6,9]. While access to substances varies between urban, rural, and remote communities, rural and remote areas have limited psychiatric and medical treatment options available to help those with substance-use disorders[9,41,42].

With the ongoing opioid epidemic, metropolitan areas have promoted safe consumption sites and other harm-reduction initiatives, while rural communities have largely gone unnoticed despite opioid use rates being up to twice the provincial average[6,30,41-43]. Attempts at integrating harm-reduction strategies in rural communities have been hampered by concern for anonymity, along with ongoing social inequities such as homelessness[9,41,43,44]. It is important to note that, even beyond harm-reduction strategies such as needle-exchange programs, additional mental health resources are available and basic needs are met, impacting a person's interest in seeking treatment beyond the acquisition of substance equipment[42].

With the added barrier of having to travel to other communities to seek equipment, individuals in rural communities are at higher risk of using contaminated equipment. Even when members are connected to treatment facilities, many do not attend because of transportation, financial limitations, and familial responsibilities[9]. Lack of trauma-informed therapy, as well as long waitlists and limited regional sites result in further barriers to concurrent treatment[9]. The significant physical, occupational and relationship consequences of substance use further exacerbate psychiatric symptoms and hamper accurate diagnoses[9]. With the innovations in technology, it is important that treatment strategies are

culturally sensitive to improve outcomes[45]. For example, in opioid agonist therapy, combining suboxone with cultural aftercare among Indigenous people improved outcomes above the national average, a significant improvement given their noted lower rates of remission, highlighting the role of healing in treatment[45]. This highlights the importance of community approaches to reduce stigma and focus on strength-based practices that are community specific, with healthcare professionals in supportive and advocacy roles[45].

Suicide

A public health concern globally[46], suicide is the second-highest cause of death among those aged 15–34 years in Canada[10,18]. Although suicide affects all socioeconomic groups, suicide risk is most pronounced among socially vulnerable groups living in socioeconomically disadvantaged areas. Along with broader societal risk factors such as mental illness and stigma associated with help-seeking, challenges within an individual's community enhance the risk of suicide, including limited access to mental health services, historical trauma, exposure to abuse and violence, and discrimination[13,19,46,47]. In Alberta, 31% of deaths by suicide occur in the Northern zone, which is predominantly rural and remote communities, despite accounting for only 10% of Alberta's population[48]. In both urban and rural communities, men are more likely to die by suicide, whereas women attempt suicide at three to four times the rate of their male counterparts; however, variability in other demographic features suggests risk factors for suicide unique to rural communities[21,49,50]. For example, in rural communities, there tends to be a collectivist 'stiff upper lip', or attitude of silent endurance[24,49,50]. Linked to resource extraction and farming, cultural norms emphasizing stoic self-reliance reinforce masculine gender stereotypes[13,24,49,50]. Stoic attitudes lead individuals to experience shame and guilt around their underlying psychiatric concerns and engage in externalizing, maladaptive behaviors such as substance use, violence, and other risk-taking behaviors[24,49-51], which are viewed as more acceptable within the community. Denial of symptoms and fear of stigma prevent engagement with local mental health supports, limiting treatment options[24,49,50]. Ownership of firearms, which is higher in rural communities compared to urban areas, further increases the risk of suicide, especially among older men[52]. Concerns with confidentiality also drive individuals to attempt suicide outside their own community[10].

Overall, the literature on suicidality in rural and remote Canada is relatively scant and underdeveloped. Further, as noted by Ryan et al, 'Despite the importance of rural culture and experiences of rurality, the voices of those with lived experience of suicidality are missing in current Canadian literature' – voices that could better inform prevention and intervention strategies[10].

Conclusion

Over the past decade, advances in technology have led to increased adoption proficiency in use of e-health service delivery approaches, which accelerated following the onset of the COVID-19 pandemic. Many services shifted to virtual options, helping to improve equity in service delivery in rural and remote regions. As previously described by Friesen (2019) in his review of mental health services in rural Canada, technology is a critical tool for addressing gaps in health service provision by engaging clinicians in large urban and metropolitan regions to provide needed specialty support[4]. Although access to healthcare services is only one of many social determinants of health, having access to care virtually may also address concerns of confidentiality, which poses barriers to accessing local services if they are available. This may also provide opportunities for better collaborative care models with local service providers, including family physicians and allied health professionals. Although some provinces have instituted such models, namely British Columbia and Ontario, these have larger metropolitan centers and a higher density of psychiatrists available to provide rural support, so implementation may be challenging for other regions given the already high demand and limited support resources.

Although virtual options can address care needs, local access to care remains a top priority given improved continuity of care, follow-up options and opportunity to build trust and supportive relationships within communities. Despite attempts to increase psychiatric practice sites in rural areas, most psychiatrists choose to practice in larger metropolitan centers following the completion of their residency training given their familiarity with urban healthcare settings and ease of access subspecialty consultation[13]. Early training exposure to rural settings, along with increasing adoption of telehealth supporting provision of subspecialty consultation, is needed to promote confidence in practicing in low-resource communities[13].

As leaders in health care, physicians are well situated to promote policy and legislative changes to improve resource allocation and address inequities in the social determinants of health impacting rural and remote communities. This includes affordable and safe housing, food and water sources, vocational and educational opportunities, and development of community informed prevention and intervention resources and approaches including Indigenous healing practices and incorporation of mental health literacy. Ensuring access to high-speed internet, recreational opportunities and reliable transportation services are also critical[3,4,13,17,24,25,28,49,50,53]. Based on this narrative review, it is clear that a multi-pronged, ongoing approach is needed to help mitigate the increased rates, severity, and duration of non-psychotic psychiatric symptomatology in rural and remote regions in Canada[3,4,13,17,24,25,28,49,50,53].

Given the underlying personal and community factors, women tend to be diagnosed with depression and seek mental health support more frequently than men[46,47]. However, at a community level, support for psychiatric illnesses is limited and, even if these supports are available, concerns with anonymity remain pronounced given the interconnectedness of community members[24,49,50]. There are also concerns that depressive and suicidal screening tools are not eliciting relevant symptoms of rural men, resulting in lower rates of diagnosed depression[24,50]. Even when the symptoms are present, there is reluctance to disclose such symptoms to a healthcare professional as it would expose the inconsistency between their internal values and their external behaviors[50].

Identification of risk and protective factors that are unique among subsets of the population, the experience of women, children, 2S (two-spirit) LGBTQ+ and Indigenous Peoples, especially in rural communities, is underrepresented in the literature[10]. As demonstrated in this narrative review, many proposed models for responding to mental health needs in rural and remote settings come from provinces with large, well-resourced academic

institutions, and a higher density of mental health professionals to draw on, which may not apply in other regions, in particular the northern territories (Yukon, Northwest Territories and Nunavut).

Efforts to promote mental health in rural and remote areas of Canada should be based on a foundation of respectful and meaningful relationships with rural and remote communities, informed by the voices and stories of those living in these communities to develop community-driven strategies for identifying, treating, and supporting vulnerable, at-risk and diagnosed community members. Use of qualitative research to better understand local cultures, and identifying stakeholders, informants, and champions (through local newspaper, radio, and social media), promises to expand relevant knowledge of risk and protective factors associated with psychiatric illness in rural communities, to better inform development of prevention strategies and interventions[10].

Limitations

Although mental health and addiction remains a significant global epidemic, research pertaining to rural and remote communities regarding these pressing public health concerns is quite limited. This narrative review was undertaken to summarize studies looking at diagnostic categories of depressive disorders, anxiety disorders and substance-use disorders, rather than unique disorders such as specific anxiety disorders (generalized anxiety disorder, social anxiety disorder), specific depressive disorders and specific substance-use disorders, or the functional impairment. The severity of substance-use disorders was also lacking, with most of the literature commenting on severe substance-use disorders, likely underestimating the rate of substance use in communities. The heterogeneity of rural and remote communities may also impact the findings and engagement in research depending on the values and culture within each community. Although narrative reviews have strengths, including addressing a broader scope, the risk of bias from a less robust search strategy and restrictive inclusion and exclusion criteria is concerning.

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